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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,419	09/26/2003	Christopher Parks	85664PCW	8448
7590 Thomas H. Close Patent Legal Staff Eastman Kodak Company 343 State Street Rochester, NY 14650-2201			EXAMINER JERABEK, KELLY L	
			ART UNIT	PAPER NUMBER
			2622	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/672,419	<b>Applicant(s)</b> PARKS, CHRISTOPHER	
	<b>Examiner</b> Kelly L. Jerabek	<b>Art Unit</b> 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Parulski et al. US 5,440,343.**

Re claims 1 and 10, Parulski discloses a digital camera including an image sensor (12) comprising: a two-dimensional array (40) of photosensitive pixels for collecting photo generated electron or hole charge packets; a Bayer color filter arranged over the photo sensitive pixels in which the first color (G) is over two pixels and the second (R) and third (B) are over one pixel each in a two by two sub-array of the Bayer color filter (figures 4-5); a parallel charge coupled device (44) for transferring charge packets in parallel towards a serial charge coupled device (50,52) that receives charge packets from the parallel column charge-coupled devices (figures 4-8; col. 4, lines 42-68); and a row of pixels between the photo sensitive pixels(40) and the serial charge-

Art Unit: 2622

coupled device (50,52) for delaying charge transfer of selected rows to offset one column of the Bayer filter pattern such that pixels of the first color (G) become aligned in one row (50) and pixels of the second (R) and third (B) colors become aligned in the following row (52) (col. 5, lines 22-31).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 2-3 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parulski et al. in view of Sugiki US 5,278,660.**

Re claims 2 and 11, Parulski discloses all of the limitations of claims 1 and 10 above. However, although the Parulski reference states that a second serial CCD (52) transfers pixels of the second (R) and third (B) colors and a first serial CCD (50) transfers pixels of a first (G) color it fails to specifically state that the first serial CCD (50) receives a row of pixels of the first color (G) and then transfers the row of pixels of the first color (G) to the second adjacent serial CCD (52), and the first serial CCD (50) then

Art Unit: 2622

receives another row of pixels of the second (R) and third (B) colors so that the first (50) and second (52) CCDs then transfer in a serial manner.

Sugiki discloses a solid-state imaging device including a u-shaped transfer register (51) for controlling the transfer of pixel charges to multiple horizontal transfer registers (13,14). Sugiki states that line charges (3) may jump over charges (2) from lower rows by way of charge-transferring sections (51a-51c) (col. 12, lines 29-40). Sugiki shows that a first serial CCD (13) receives a row of pixels (3) and then transfers the row of pixels (3) to a second adjacent serial CCD (14), and the first serial CCD (13) then receives another row of pixels (2) so that the first and second serial CCDs transfer in a serial manner (figures 16A-16E; column 11, line 66-col. 13, line 7). Therefore it would have been obvious for one skilled in the art to have been motivated to transfer the row of (G) pixels and the row of the (R,B) pixels disclosed by Parulski to the serial CCDs (50,52) using the transfer process disclosed by Sugiki. Doing so would provide a means for effectively reading out image signals accumulated by an image sensor.

Re claims 3 and 12, Parulski discloses all of the limitations of claims 1 and 10 above. However, although the Parulski reference states that a second serial CCD (52) transfers pixels of the second (R) and third (B) colors and a first serial CCD (50) transfers pixels of a first (G) color it fails to specifically state that the first serial CCD (50) receives a row of pixels of the second (R) and third (B) colors and then transfers the row of pixels of the second (R) and third (B) colors to the second adjacent serial CCD (52),

Art Unit: 2622

and the first serial CCD (50) then receives another row of pixels of the first color (G) so that the first (50) and second (52) CCDs then transfer in a serial manner.

Sugiki discloses a solid-state imaging device including a u-shaped transfer register (51) for controlling the transfer of pixel charges to multiple horizontal transfer registers (13,14). Sugiki shows that a first serial CCD (13) receives a row of pixels (1) and then transfers the row of pixels (1) to a second adjacent serial CCD (14), and the first serial CCD (13) then receives another row of pixels (2) so that the first and second serial CCDs transfer in a serial manner (figures 15A-15D; column 11, line 10-col. 11, line 65). Therefore it would have been obvious for one skilled in the art to have been motivated to transfer the row of (G) pixels and the row of the (R,B) pixels disclosed by Parulski to the serial CCDs (50,52) using the transfer process disclosed by Sugiki. Doing so would provide a means for effectively reading out image signals accumulated by an image sensor.

**Claims 4-5 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parulski et al. in view of Kinoshita US 4,928,137.**

Re claims 4 and 13, Parulski discloses all of the limitations of claim 1 above. However, although Parulski discloses delaying charge transfer of selected rows such that pixels of the first color (G) become aligned in one row and pixels of the second (R) and third (B) colors become aligned in the following row it fails to disclose a row of pixels between the photo sensitive pixels (40) and the serial charge-coupled device

Art Unit: 2622

(50,52) that includes a sub-array of pixels arranged in two columns such that the first column contains one pixel and the second column contains two pixels.

Kinoshita discloses an image sensor (4) that transfers electric charge from an image sensing part (4A) to horizontal shift registers (31-33). Kinoshita discloses a row of pixels (34) between photo sensitive pixels (4A) and serial charge-coupled devices (31-33) that includes a sub-array of pixels arranged in columns (I,II) such that the first column (I) contains one pixel (115) and the second column (II) contains two pixels (114, 113) so that the transfer of charges of rows of pixels is delayed (figure 5, column 9, line 22-col. 10, line 29). Therefore, it would have been obvious for one skilled in the art to have been motivated to include a charge delaying transfer region including a column containing one pixel and a second column containing two pixels for delaying pixel charges as disclosed by Kinoshita in the image sensor capable of delaying charge transfer of selected rows to offset a column of a Bayer filter pattern disclosed by Parulski. Doing so would provide a means for delaying charges that are read out of different horizontal CCD registers of an image sensor.

Re claims 5 and 14, Parulski discloses all of the limitations of claim 1 above. However, although Parulski discloses delaying charge transfer of selected rows such that pixels of the first color (G) become aligned in one row and pixels of the second (R) and third (B) colors become aligned in the following row it fails to disclose a row of pixels between the photo sensitive pixels (40) and the serial charge-coupled device (50,52) that includes a sub-array of pixels arranged in two columns such that the first

Art Unit: 2622

column transfers charge packets the same as the two-dimensional array and the second column transfers charge packets independent of the two-dimensional array.

Kinoshita discloses an image sensor (4) that transfers electric charge from an image sensing part (4A) to horizontal shift registers (31-33). Kinoshita discloses a row of pixels (34) between photo sensitive pixels (4A) and serial charge-coupled devices (31-33) that includes a sub-array of pixels arranged in columns (I,II) such that the first column (I) contains one pixel (115) and transfers charge packets the same as the two-dimensional array and the second column (II) contains two pixels (114, 113) and transfers charge packets independent of the two-dimensional array so that the transfer of charges of rows of pixels is delayed (figure 5, column 9, line 22-col. 10, line 29). Therefore, it would have been obvious for one skilled in the art to have been motivated to include a charge delaying transfer region including a column containing one pixel and a second column containing two pixels for delaying pixel charges as disclosed by Kinoshita in the image sensor capable of delaying charge transfer of selected rows to offset a column of a Bayer filter pattern disclosed by Parulski. Doing so would provide a means for delaying charges that are read out of different horizontal CCD registers of an image sensor.

**Claims 6-9 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parulski et al. in view of Sugiki and further in view of Kinoshita.**



Re claims 6-7 and 15-16, the combination of the Parulski and Sugiki references discloses all of the limitations of claims 2, 3, 11 and 12 above. However, although the combination of the Parulski and Sugiki references discloses delaying charge transfer of selected rows such that pixels of the first color (G) become aligned in one row and pixels of the second (R) and third (B) colors become aligned in the following row it fails to disclose a row of pixels between the photo sensitive pixels (40) and the serial charge-coupled device (50,52) that includes a sub-array of pixels arranged in two columns such that the first column contains one pixel and the second column contains two pixels.

Kinoshita discloses an image sensor (4) that transfers electric charge from an image sensing part (4A) to horizontal shift registers (31-33). Kinoshita discloses a row of pixels (34) between photo sensitive pixels (4A) and serial charge-coupled devices (31-33) that includes a sub-array of pixels arranged in columns (I,II) such that the first column (I) contains one pixel (115) and the second column (II) contains two pixels (114, 113) so that the transfer of charges of rows of pixels is delayed (figure 5, column 9, line 22-col. 10, line 29). Therefore, it would have been obvious for one skilled in the art to have been motivated to include a charge delaying transfer region including a column containing one pixel and a second column containing two pixels for delaying pixel charges as disclosed by Kinoshita in the image sensor capable of delaying charge transfer of selected rows to offset a column of a Bayer filter pattern disclosed by the combination of the Parulski and Sugiki references. Doing so would provide a means for delaying charges that are read out of different horizontal CCD registers of an image sensor.

Re claims 8-9 and 17-18, the combination of the Parulski and Sugiki references discloses all of the limitations of claims 2, 3, 11 and 12 above. However, although the combination of the Parulski and Sugiki references discloses delaying charge transfer of selected rows such that pixels of the first color (G) become aligned in one row and pixels of the second (R) and third (B) colors become aligned in the following row it fails to disclose a row of pixels between the photo sensitive pixels (40) and the serial charge-coupled device (50,52) that includes a sub-array of pixels arranged in two columns such that the first column transfers charge packets the same as the two-dimensional array and the second column transfers charge packets independent of the two-dimensional array.

Kinoshita discloses an image sensor (4) that transfers electric charge from an image sensing part (4A) to horizontal shift registers (31-33). Kinoshita discloses a row of pixels (34) between photo sensitive pixels (4A) and serial charge-coupled devices (31-33) that includes a sub-array of pixels arranged in columns (I,II) such that the first column (I) contains one pixel (115) and transfers charge packets the same as the two-dimensional array and the second column (II) contains two pixels (114, 113) and transfers charge packets independent of the two-dimensional array so that the transfer of charges of rows of pixels is delayed (figure 5, column 9, line 22-col. 10, line 29). Therefore, it would have been obvious for one skilled in the art to have been motivated to include a charge delaying transfer region including a column containing one pixel and a second column containing two pixels for delaying pixel charges as disclosed by

Art Unit: 2622

Kinoshita in the image sensor capable of delaying charge transfer of selected rows to offset a column of a Bayer filter pattern disclosed by the combination of the Parulski and Sugiki references. Doing so would provide a means for delaying charges that are read out of different horizontal CCD registers of an image sensor.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Iizuka (US 6,169,577) discloses a color CCD solid-state image pickup. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Tanigawa et al. (US 5,894,143) discloses a solid-state image pick-up device for the charge-coupled device type synchronizing drive signals for a full-frame read-out. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Toma et al. (US 5,867,212) discloses a solid-state image pickup device using charge coupled devices with vacant packet transfer. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Kobayashi et al. (US 4,924,316) discloses a solid color pickup apparatus. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Kobayashi et al. (US 4,829,368) discloses a solid color pickup apparatus. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Stevens et al. (US 6,693,671) discloses a fast-dump structure for full-frame image sensors with LOD antiblooming structures. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Parulski et al. (US 6,292,218) discloses an electronic camera for initiating capture of still images while previewing motion images. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Yamada (US 6,236,434) discloses a solid state image pickup device. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Yamada et al. (US 6,690,421) discloses a structure of a solid-state image pickup device. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Koike et al. (US 4,514,766) discloses a solid-state imaging device. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

Sekine et al. (US 4,336,556) discloses a solid-state image pick-up device. The information regarding the transfer and readout of image signals in an image pickup device is relevant material.

### ***Contacts***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly L. Jerabek whose telephone number is **(571) 272-7312**. The examiner can normally be reached on Monday - Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on **(571) 272-7304**. The fax phone number for submitting all Official communications is **(703) 872-9306**. The fax phone number for submitting informal communications such as drafts, proposed amendments, etc., may be faxed directly to the Examiner at **(571) 273-7312**.

Art Unit: 2622

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KLJ



TUAN HO  
PRIMARY EXAMINER